Procedural

Duck model exported as .ass file and imported as a *procedural*

You can export any object as a .ass file. A *procedural* (also called stand-in, proxy or placeholder) references the .ass file on disk (or other procedural formats supported by Arnold such as .obj or .ply). They allow you to keep your working scene light and workable by deferring the loading of geometry data until render time.

> ⓘ During export, Arnold's current render settings will be used. Therefore, you should finalize these settings before exporting the *Stand-in*. For example, you should choose whether you wish to export with motion blur enabled or not.

> ⚠ The *utility* shader's *object* mode does not work with procedurals *(stand-ins)*. This is a known limitation. The color of the spheres changes when the *utility* shader's mode is *object*. However, the *stand-ins* color remains the same.
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> ✓ **Sharing Arnold Procedurals Between Plug-ins**
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> Some users may be in a studio environment where a combination of Maya, 3DS Max, Houdini, and C4D are used. It is perfectly possible to export .ass Arnold Procedurals (stand-ins) and reuse them in other Arnold plug-ins (and vice versa), as long as Arnold can find both the plug-in and shaders. To do this, you must ensure that the Arnold shader path environment variable ARNOLD_PLUGIN_PATH is set to pick up both sets of shaders.

> ⓘ HtoA dynamically adds object (OBJ) nodes for all procedurals loaded at startup. For example, with the default HtoA installation, you get the *Arnold Alembic*, *Arnold Usd*, *Arnold Procedural*, and *Arnold Mandelbulb* object nodes.
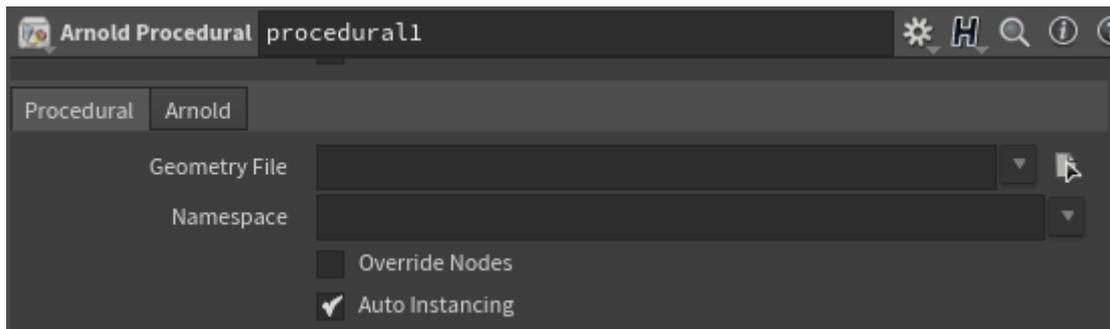
Arnold Procedurals can be created by tab-typing **Arnold Procedural** or **Tab > Arnold > Arnold Procedural** at the OBJ level. The procedural node can be used to load an external geometry file or a compiled DSO (Dynamic Shared Object).

Geometry File

The path to the geometry file (obj, ply or ass) or program to be loaded.

Auto Instancing (Arnold)

Allows per-procedural selection of the use of this functionality (only '.ass' procedurals support it for now). When enabled, multiple uses of the same filename will be transparently converted to instances. This workaround is sometimes useful when overriding procedural parameters with operators.

> ⚠ You should only disable this to prevent automatic instancing of the same .ass file. It is enabled by default and is only intended for technical users.

> ⓘ The **.asstoc** file is a cache that describes the bounding box of the procedural. It allows an optimization of the scene since the plugin does not have to read the referenced ASS file to detect the bounds. However, there are cases when no asstoc files exist (e.g. the ASS files are coming from a different source (RealFlow, etc.)). If HtoA cannot detect the bounding box (e.g. no asstoc file is given and the

Arnold, Alembic, USD

The following parameter are Arnold *procedural* specific parameters.

Namespace

Procedurals can declare a custom namespace using this parameter. This custom namespace can be used instead of the procedural name, to reference contents through absolute or relative paths. Multiple procedurals can share the same namespace by using the same custom name. Also, they can declare an empty name and they will use the global namespace.

Override Nodes

Nodes inside the procedural can be replaced by other nodes with this parameter. This may be used for example to replace shaders in an existing .ass procedural. When the parameter is enabled, nodes in the immediate parent scope of the procedural will replace identically named nodes inside the procedural.

Viewport Proxy

File

Reads the bounding box from the Geometry File. This will only work for .obj and .ply files. Bounds for .ass files will be displayed if an .asstoc file is found alongside the .ass file.

Target SOP

Use an object in the scene to attach as a bounding box preview.

Display As

The assigned file can be displayed as *Global Bounding Box, Bounding Box per Node, Points,* and *Polygons.*
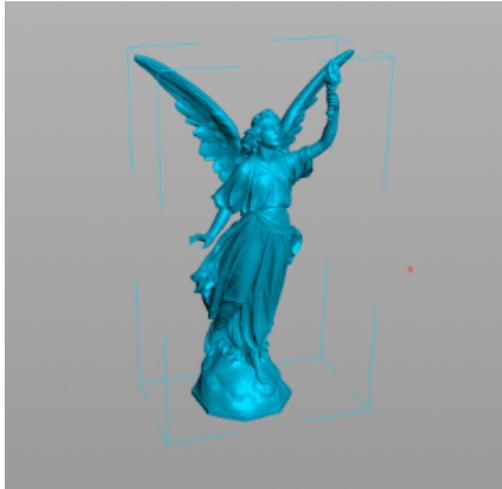
Proxy SOP

Provides a bounding box representation for visualizing the contents of a procedural when importing geometry into Houdini using a SOP.

Operator Graph

You can choose to connect any existing *operator* graph to a *procedural*.

To connect a *Procedural Operator* to an Arnold *Procedural*, you have to pick the operator ROP in the Arnold properties of the arnold_procedural OBJ node. Use the Arnold Properties top-level Arnold | Operator Graph parameter to pick the operator ROP, which can be anywhere in your scene.
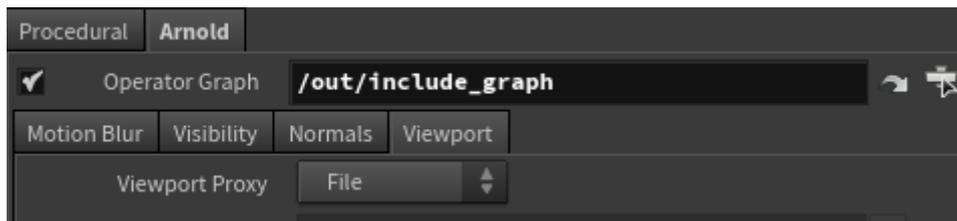
Procedural Operator parameter in Arnold properties of *Arnold Procedural*